

AF-2 – Improve Manure Management

This broad, umbrella option includes composting, manure, manure digesters, and optimal application of nitrogen fertilizers.

Benefit/Cost of Reducing CO₂e:

Arizona: 3.8 MMt between 2007-2020; 0.3% of 2020 emissions; \$1/ton
New Mexico: 6.3 MMt between 2007-2020; 0.8% of 2020 emissions; \$3/ton²
Colorado: 0.1-1.0 MMt; unknown cost

According to the 2000 Utah Office of Energy and Resource Planning report, assuming that some practices will be adopted, one might assume that nitrogen emissions could be reduced by 5 percent. Based on the 2010 forecast of 127,290 tons of CO₂ equivalents, this translated into a savings of 6,365 tons.³

Assessment: Medium Priority. Bin B. 13 out of 22 votes.

This option presents some good opportunities in Utah, while also offering the potential to important co-benefits, such as reduced water pollution and noxious odors. Farmers generally do a good job with nutrient management but there are problems in urban areas with home/hobby gardening. In Utah, there has been some interest in generating electricity from manure onsite and providing excess to the grid. Some research is being conducted at USU on this and related technologies. Digester technology is being improved and there are examples of manure management.⁴ The technology is still somewhat early for commercialization and needs more R&D to improve its viability. Some efforts have been abandoned due to technical problems related to the quantity of natural gas produced from manure to generate electricity and engine corroding agents from the gas produced. However, this option may hold additional value because it reduces the flaring of methane, and methane is much more potent GHG than is CO₂.

Utah has identified and inventoried 99% of the State's feeding operations. Included in the inventory process is a plan for managing waste—land application as compost. Estimates suggest that better practices could reduce nitrogen fertilizer use by as much as 20 percent. At this level, there is a low risk of yield penalty and the added possibility of input-cost savings to farmers.⁵ Improved management practices coupled with specific technologies may achieve energy savings by reducing the need for plowing and other energy intensive practices. Practices which could be improved include application rates, placements, timing, soil testing frequency, low-nitrogen and/or fertilizer use, and conservation tillage. Technical approaches that could be followed include the use of fertilizer additives that increase nitrogen-use efficiency by decreasing nitrogen loss

² Projected for digester systems used on dairies, not feedlots.

³ 2000 Utah Office of Energy and Resource Planning (OERP) report.

⁴ See Circle Four/Smithfield Farms in Milford.

⁵ Utah's State Action Plan

through volatilization, limiting or retarding fertilizer water solubility through supergranulation, and reducing nitrogen release. To a large degree, the modification of fertilizer practices is dependent on establishing effective ways of disseminate the knowledge of new practices.